

ATTORNEY DOCKET NO.: 05015.0365U1

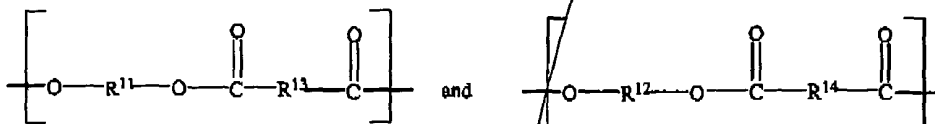
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IN THE CLAIMS

Please cancel claims 6, 19 and 23, without prejudice.

Please amend claims 1, 7, 10 and 22 as follows:

1. (Amended) A method for slowing the degradation rate of a biodegradable polymer composition wherein the method comprises:
- introducing a phenol-containing compound comprising terpene-phenol resin into a biodegradable polymer or biodegradable polymer composition in an amount sufficient to slow the degradation rate of the biodegradable polymer or biodegradable polymer composition; and
  - mixing the phenol-containing compound with the biodegradable polymer or biodegradable polymer composition;
- wherein the biodegradable polymer or biodegradable polymer composition comprises one or more of:
- an aliphatic-aromatic copolyester having repeat units of the following structures:



wherein

- (i)  $\text{R}^{11}$  and  $\text{R}^{12}$  are the same or different, and are residues of one or more of diethylene glycol, propylene glycol, 1,3-propanediol, 2,2-dimethyl-1,3-propanediol, 1,3-butanediol, 1,4-butanediol, 1,5-pentanediol, 1,6-hexanediol, 2,2,4-trimethyl-1,6-hexanediol, thiodiethanol, 1,3-cyclohexanedimethanol, 1,4-

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cyclohexanedimethanol, 2,2,4,4-tetramethyl-1,3-cyclobutanediol, triethylene glycol, or tetraethylene glycol;

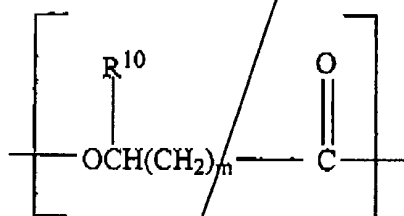
(ii)  $R^{11}$  and  $R^{12}$  are 100% of the diol components in the copolyester;

(iii)  $R^{13}$  is absent or is selected from one or more of the groups consisting of  $C_1 - C_{12}$  alkylene or oxyalkylene;  $C_1 - C_{12}$  alkylene or oxyalkylene substituted with one to four substituents independently selected from the group consisting of halo,  $C_6 - C_{10}$  aryl, and  $C_1 - C_4$  alkoxy;  $C_5 - C_{10}$  cycloalkylene; and  $C_5 - C_{10}$  cycloalkylene substituted with one to four substituents independently selected from the group consisting of halo,  $C_6 - C_{10}$  aryl, and  $C_1 - C_4$  alkoxy; and

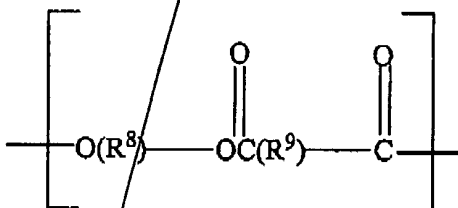
(iv)  $R^{14}$  is selected from one or more of the groups consisting of  $C_6 - C_{10}$  aryl, and  $C_6 - C_{10}$  aryl substituted with one to four substituents independently selected from the group consisting of halo,  $C_1 - C_4$  alkyl, and  $C_1 - C_4$  alkoxy;

2. an aliphatic polyester having repeat units of one or more of the following structures:

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or



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wherein  $m$  is an integer of from 0 to 10, and  $R^{10}$  is selected from the group consisting of hydrogen;  $C_1$ - $C_{12}$  alkyl;  $C_1$ - $C_{12}$  alkyl substituted with one to four substituents independently selected from the group consisting of halo,  $C_6$ - $C_{10}$  aryl, and  $C_1$ - $C_4$  alkoxy;  $C_5$ - $C_{10}$  cycloalkyl; and  $C_5$ - $C_{10}$  cycloalkyl substituted with one to four substituents independently selected from the group consisting of halo,  $C_6$ - $C_{10}$  aryl, and  $C_1$ - $C_4$  alkoxy,

wherein  $R^8$  is selected from the group consisting of  $C_2$ - $C_{12}$  alkylene or  $C_2$ - $C_{12}$  oxyalkylene;  $C_2$ - $C_{12}$  alkylene or  $C_2$ - $C_{12}$  oxyalkylene substituted with one to four substituents independently selected from the group consisting of halo,  $C_6$ - $C_{10}$  aryl, and  $C_1$ - $C_4$  alkoxy;  $C_5$ - $C_{10}$  cycloalkylene;  $C_5$ - $C_{10}$  cycloalkylene substituted with one to four substituents independently selected from the group consisting of halo,  $C_6$ - $C_{10}$  aryl, and  $C_1$ - $C_4$  alkoxy, and

wherein  $R^9$  is absent or is selected from one or more of the group consisting of  $C_1$ - $C_{12}$  alkylene or oxyalkylene;  $C_1$ - $C_{12}$  alkylene or oxyalkylene substituted with one to four substituents independently selected from the group consisting of halo,  $C_6$ - $C_{10}$  aryl, and  $C_1$ - $C_4$  alkoxy;  $C_5$ - $C_{10}$  cycloalkylene; and  $C_5$ - $C_{10}$  cycloalkylene substituted with one to four substituents independently selected from the group consisting of halo,  $C_6$ - $C_{10}$  aryl, and  $C_1$ - $C_4$  alkoxy; and

3) a  $C_1$ - $C_{10}$  cellulose ester having a DS equal to or less than about 2.5.

7. (Amended) The method of claim 1 wherein the biodegradable polymer or biodegradable polymer composition comprises the aliphatic-aromatic copolyester and wherein  $R^{11}$  and  $R^{12}$  are the same or different, and are selected from the group consisting of residues of one or more of glycol, propylene glycol, 1,3-propanediol, 1,3-butanediol, and 1,4-butanediol,  $R^{13}$  is selected from the group consisting of malonic acid, succinic acid, glutaric acid, adipic acid, pimelic acid,

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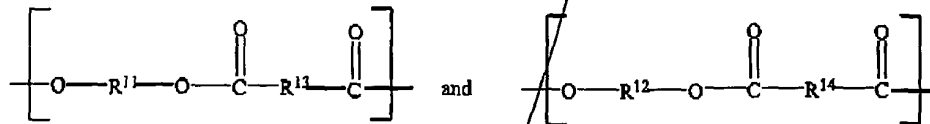
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*A<sup>2</sup>*

2,2-dimethyl glutaric acid, diglycolic acid, and an ester forming derivative thereof, and R<sup>14</sup> is selected from the group consisting of one or more of 1,4-terephthalic acid, 1,3-terephthalic acid, 2,6-naphthoic acid, 1,5-naphthoic acid, and an ester forming derivative thereof.

10. (Amended) A method for slowing the degradation rate of a biodegradable polymer or polymer composition, wherein the method comprises:
- (a) introducing a phenol-containing compound into a biodegradable polymer or polymer composition in an amount sufficient to slow the degradation rate of the biodegradable polymer or polymer composition; and
  - (b) mixing the phenol-containing compound with the biodegradable polymer or polymer composition, wherein the biodegradable polymer comprises one or more of the following:

- A<sup>3</sup>*
- 1. an aliphatic-aromatic copolyester having repeat units of the following structures:



*SUB 037*

wherein

- (i) R<sup>11</sup> and R<sup>12</sup> are the same or different, and are residues of one or more of diethylene glycol, propylene glycol, 1,3-propanediol, 2,2-dimethyl-1,3-propanediol, 1,3-butanediol, 1,4-butanediol, 1,5-pentanediol, 1,6-hexanediol, 2,2,4-trimethyl-1,6-hexanediol, thiodiethanol, 1,3-cyclohexanedimethanol, 1,4-cyclohexanedimethanol, 2,2,4,4-tetramethyl-1,3-cyclobutanediol, triethylene glycol, or tetraethylene glycol;
- (ii) R<sup>11</sup> and R<sup>12</sup> are 100% of the diol components in the copolyester;
- (iii) R<sup>13</sup> is absent or is selected from one or more of the groups consisting of C<sub>1</sub> - C<sub>12</sub> alkylene or oxyalkylene; C<sub>1</sub> - C<sub>12</sub> alkylene or

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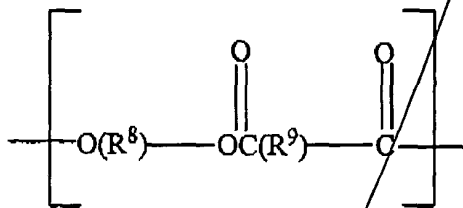
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oxyalkylene substituted with one to four substituents independently selected from the group consisting of halo, C<sub>6</sub> - C<sub>10</sub> aryl, and C<sub>1</sub> - C<sub>4</sub> alkoxy; C<sub>5</sub> - C<sub>10</sub> cycloalkylene; and C<sub>5</sub> - C<sub>10</sub> cycloalkylene substituted with one to four substituents independently selected from the group consisting of halo, C<sub>6</sub> - C<sub>10</sub> aryl, and C<sub>1</sub> - C<sub>4</sub> alkoxy; and

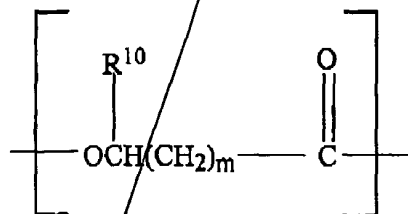
(iv) R<sup>14</sup> is selected from one or more of the groups consisting of C<sub>6</sub> - C<sub>10</sub> aryl, and C<sub>6</sub> - C<sub>10</sub> aryl substituted with one to four substituents independently selected from the group consisting of halo, C<sub>1</sub> - C<sub>4</sub> alkyl, and C<sub>1</sub> - C<sub>4</sub> alkoxy;

- 2) an aliphatic polyester having repeat units of one or more of the following structures:

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or



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wherein  $m$  is an integer of from 0 to 10, and  $R^{10}$  is selected from the group consisting of hydrogen;  $C_1$ - $C_{12}$  alkyl;  $C_1$ - $C_{12}$  alkyl substituted with one to four substituents independently selected from the group consisting of halo,  $C_6$ - $C_{10}$  aryl, and  $C_1$ - $C_4$  alkoxy;  $C_5$ - $C_{10}$  cycloalkyl; and  $C_5$ - $C_{10}$  cycloalkyl substituted with one to four substituents independently selected from the group consisting of halo,  $C_6$ - $C_{10}$  aryl, and  $C_1$ - $C_4$  alkoxy,

wherein  $R^8$  is selected from the group consisting of  $C_2$ - $C_{12}$  alkylene or  $C_2$ - $C_{12}$  oxyalkylene;  $C_2$ - $C_{12}$  alkylene or  $C_2$ - $C_{12}$  oxyalkylene substituted with one to four substituents independently selected from the group consisting of halo,  $C_6$ - $C_{10}$  aryl, and  $C_1$ - $C_4$  alkoxy;  $C_5$ - $C_{10}$  cycloalkylene;  $C_5$ - $C_{10}$  cycloalkylene substituted with one to four substituents independently selected from the group consisting of halo,  $C_6$ - $C_{10}$  aryl, and  $C_1$ - $C_4$  alkoxy, and

wherein  $R^9$  is absent or is selected from one or more of the group consisting of  $C_1$ - $C_{12}$  alkylene or oxyalkylene;  $C_1$ - $C_{12}$  alkylene or oxyalkylene substituted with one to four substituents independently selected from the group consisting of halo,  $C_6$ - $C_{10}$  aryl, and  $C_1$ - $C_4$  alkoxy;  $C_5$ - $C_{10}$  cycloalkylene; and  $C_5$ - $C_{10}$  cycloalkylene substituted with one to four substituents independently selected from the group consisting of halo,  $C_6$ - $C_{10}$  aryl, and  $C_1$ - $C_4$  alkoxy; and

3)  $C_1$ - $C_{10}$  cellulose ester having a DS equal to or less than about 2.5.

22. (Amended) A biodegradable polymer composition comprising:

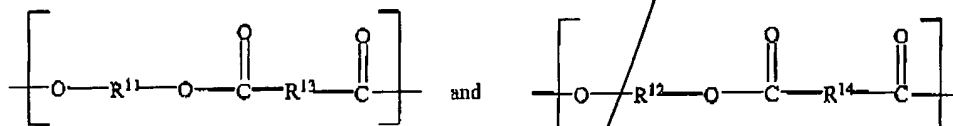
- a. a phenol-containing compound comprising terpene-phenol resin incorporated in the biodegradable polymer or biodegradable polymer-second material composition, the phenol-containing compound being present at an amount sufficient to slow the degradation rate of the biodegradable polymer or biodegradable polymer second-material composition; and

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b. a biodegradable polymer or biodegradable polymer-second material composition comprising one or more of the following:

1. an aliphatic-aromatic copolyester having repeat units of the following structures:



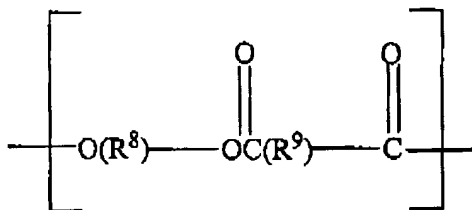
wherein

- (i)  $\text{R}^{11}$  and  $\text{R}^{12}$  are the same or different, and are residues of one or more of diethylene glycol, propylene glycol, 1,3-propanediol, 2,2-dimethyl-1,3-propanediol, 1,3-butanediol, 1,4-butanediol, 1,5-pentanediol, 1,6-hexanediol, 2,2,4-trimethyl-1,6-hexanediol, thiodiethanol, 1,3-cyclohexanedimethanol, 1,4-cyclohexanedimethanol, 2,2,4,4-tetramethyl-1,3-cyclobutanediol, triethylene glycol, or tetraethylene glycol;
- (ii)  $\text{R}^{11}$  and  $\text{R}^{12}$  are 100% of the diol components in the copolyester;
- (iii)  $\text{R}^{13}$  is absent or is selected from one or more of the groups consisting of  $\text{C}_1 - \text{C}_{12}$  alkylene or oxyalkylene;  $\text{C}_1 - \text{C}_{12}$  alkylene or oxyalkylene substituted with one to four substituents independently selected from the group consisting of halo,  $\text{C}_6 - \text{C}_{10}$  aryl, and  $\text{C}_1 - \text{C}_4$  alkoxy;  $\text{C}_5 - \text{C}_{10}$  cycloalkylene; and  $\text{C}_5 - \text{C}_{10}$  cycloalkylene substituted with one to four substituents independently selected from the group consisting of halo,  $\text{C}_6 - \text{C}_{10}$  aryl, and  $\text{C}_1 - \text{C}_4$  alkoxy; and
- (iv)  $\text{R}^{14}$  is selected from one or more of the groups consisting of  $\text{C}_6 - \text{C}_{10}$  aryl, and  $\text{C}_6 - \text{C}_{10}$  aryl substituted with one to four substituents independently selected from the group consisting of halo,  $\text{C}_1 - \text{C}_4$  alkyl, and  $\text{C}_1 - \text{C}_4$  alkoxy;

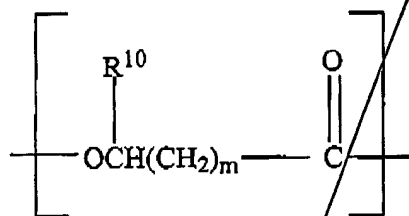
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- 2) an aliphatic polyester having repeat units of one or more of the following structures:



or



wherein  $m$  is an integer of from 0 to 10, and  $\text{R}^{10}$  is selected from the group consisting of hydrogen;  $\text{C}_1\text{-C}_{12}$  alkyl;  $\text{C}_1\text{-C}_{12}$  alkyl substituted with one to four substituents independently selected from the group consisting of halo,  $\text{C}_6\text{-C}_{10}$  aryl, and  $\text{C}_1\text{-C}_4$  alkoxy;  $\text{C}_5\text{-C}_{10}$  cycloalkyl; and  $\text{C}_5\text{-C}_{10}$  cycloalkyl substituted with one to four substituents independently selected from the group consisting of halo,  $\text{C}_6\text{-C}_{10}$  aryl, and  $\text{C}_1\text{-C}_4$  alkoxy, wherein  $\text{R}^8$  is selected from the group consisting of  $\text{C}_2\text{-C}_{12}$  alkylene or  $\text{C}_2\text{-C}_{12}$  oxyalkylene;  $\text{C}_2\text{-C}_{12}$  alkylene or  $\text{C}_2\text{-C}_{12}$  oxyalkylene substituted with one to four substituents independently selected from the group consisting of halo,  $\text{C}_6\text{-C}_{10}$  aryl, and  $\text{C}_1\text{-C}_4$  alkoxy;  $\text{C}_5\text{-C}_{10}$  cycloalkylene;  $\text{C}_5\text{-C}_{10}$  cycloalkylene substituted with one to four substituents independently selected from the group consisting of halo,  $\text{C}_6\text{-C}_{10}$  aryl, and  $\text{C}_1\text{-C}_4$  alkoxy, and